4.0 RESTORATION PLANNING

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4.0 Restoration Planning

Restoration of the affected resources in the Whatcom Creek watershed requires an approach that focuses on several interconnected resources, including water quality, fish and wildlife habitat, living resources, and recreational resources. The Trustees have evaluated potential restoration options that will restore the affected natural resources to pre-Incident or baseline levels and compensate for interim losses.

In developing this draft RP/EA, the Trustees have taken into consideration the restoration concepts proposed by the Company as well as proposals submitted by each of the Trustees. The Trustees have also taken into consideration the activities that were conducted or are ongoing as part of the response operations. These include emergency restoration actions already taken to address injuries to Whatcom and Hanna creeks and riparian habitats.

The Oil Pollution Act and NEPA regulations require that the Trustees state their preferred alternative(s) and explain the basis for their selection or rejection of other alternatives. These Trustee determinations may be modified based on public input and comment.

4.1 Restoration Strategy

The goal of the NRDA process is restoration of the injured natural resources and compensation for the interim lost uses of those resources. The Oil Pollution Act requires that this goal be achieved by returning injured natural resources to their pre-Incident condition, and by compensating for any interim losses of natural resources and services during the period of recovery to baseline.

Restoration actions under the Oil Pollution Act regulations are either primary or compensatory. Primary restoration is action(s) taken to return the injured natural resources and services to baseline on an accelerated time frame by directly replacing the resource or service. As one form of primary restoration, the Oil Pollution Act regulations require that Trustees consider natural recovery of the resource. Trustees may select natural recovery under three conditions: 1) if feasible; 2) if cost-effective primary restoration is not available; or 3) if injured resources will recover quickly to baseline without human intervention. Primary restoration alternatives can range from natural recovery, to actions that prevent interference with natural recovery, to more intensive actions expected to return injured natural resources and services to baseline faster or with greater certainty than natural recovery alone. For example, rather than rely on dispersion of seeds and natural succession of plant species after the fire, the Company planted conifer seedlings in the burn zone. These actions should return the forest canopy to pre-Incident condition faster than natural recovery.

Compensatory restoration includes actions taken to compensate for the interim losses of natural resources and/or services pending recovery. In the tree-planting example above, the primary restoration of planting trees will accelerate the rate of recovery, but the forest canopy will still

take decades to mature. During the time frame necessary for the forest to recover, ecological functions and human uses will be reduced. Compensatory restoration is designed to make up for the interim loss of services. The type and scale of compensatory restoration depends on the nature of the primary restoration action and the level and rate of recovery of the injured natural resources and/or services, given the primary restoration action. When identifying compensatory restoration alternatives, Trustees must first consider actions that provide services of the same type and quality and that are of comparable value as those lost. If a reasonable range of compensatory actions of the same type and quality and comparable value cannot be found, Trustees then consider other compensatory restoration actions that will provide services of at least comparable type and quality as those lost.

Compensatory restoration alternatives must be scaled to ensure that the size or quantity of the proposed project reflects the magnitude of the injuries from the spill. The Trustees selected different scaling approaches for the lost ecological and human uses, which are explained with the proposed restoration alternatives in Section 5.

Because the Trustees are in the preliminary stages of restoration planning, several of the restoration alternatives included in Section 5 are based on conceptual designs rather than detailed engineering design work or operational plans. Therefore, details of specific projects may require additional refinements or adjustments to reflect site conditions or other factors. Restoration project designs also may change to reflect public comments and additional Trustee analysis. The Trustees assume that implementation of restoration will begin in 2002. Should actual implementation occur after this period, the Trustees may revise their calculations of losses and scale of appropriate restoration.

4.2 Evaluation Criteria

Oil Pollution Act regulations (15 CFR § 990.54) require that Trustees develop a reasonable range of primary and compensatory restoration alternatives and then identify the preferred alternatives based on the six criteria listed in the regulations:

- Cost to carry out the alternative;
- Extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;
- Likelihood of success of each alternative;
- Extent to which each alternative will prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative;
- Extent to which each alternative benefits more than one natural resource and/or service; and
- Effect of each alternative on public health and safety.

In addition, the Trustees considered several other factors including:

- Nexus to geographic location of the injuries; and
- Compliance with applicable federal and state laws and policies.

The NEPA applies to restoration actions taken by Federal Trustees. To reduce transaction costs and avoid delays in restoration, the Oil Pollution Act regulations encourage the Trustees to conduct the NEPA process concurrently with the development of the draft restoration plan.

To comply with the requirements of NEPA, the Trustees analyzed the effects of each preferred alternative on the quality of the environment. NEPA's implementing regulations (40 CFR § 1508.27) direct Federal agencies to evaluate the potential significance of proposed actions by considering both context and intensity. For the actions proposed in this draft RP/EA, the appropriate context for considering potential significance of the action is local, as opposed to national or worldwide.[23]

With respect to evaluating the intensity of the impacts of the proposed action, the NEPA regulations suggest consideration of ten factors:

1. Likely impacts of the proposed project;
2. Likely effects of the project on public health and safety;
3. Unique characteristics of the geographic area in which the project is to be implemented;
4. Controversial aspects of the project or its likely effects on the human environment;
5. Degree to which possible effects of implementing the project are highly uncertain or involve unknown risks;
6. Precedential effect of the project on future actions that may significantly affect the human environment;
7. Possible significance of cumulative impacts from implementing this and other similar projects;
8. Effects of the project on National Historic Places, or likely impacts to significant cultural, scientific, or historic resources;
9. Degree to which the project may adversely affect endangered or threatened species or their critical habitat; and
10. Likely violations of environmental protection laws.

[23] While the Incident generated broad national interest and concern, the restoration actions are expected to have only local benefits.

4.3 Summary of the Restoration Alternatives

The Trustees evaluated a range of primary and compensatory restoration alternatives intended to enhance the recovery of the Whatcom Creek watershed and/or to provide additional resource services to compensate the public for losses pending natural recovery. The Trustees developed some of the restoration concepts and the Company proposed other projects. In evaluating these preliminary alternatives, the Trustees have also taken into consideration the activities that were conducted as part of response operations and the potential for natural recovery. These actions include restoration projects already implemented by the Company to address injuries to stream sediments, enhance spawning habitats, control erosion, remove invasive vegetation, and restore riparian vegetation (AR #1, 15).

Although the Incident resulted in significant impacts to the resources in the Whatcom Creek watershed, the Trustees believe that the prompt actions taken to respond to and remediate the Incident will allow these resources to recover over time. In some instances, natural recovery will be preferable to return resources to their pre-Incident condition. This recovery, depending on the injury category, may take years to occur, however. Therefore, many of the restoration alternatives evaluated in this document are focused on compensating for the interim losses resulting from the Incident.

As mentioned above, the Trustees focused on restoration projects that addressed the five categories of injury and loss: 1) Vegetation; 2) Water Quality; 3) Fisheries; 4) Wildlife; and 5) Human Uses. A total of thirty-six restoration alternatives (including many alternatives that were implemented as emergency projects) were considered.

These alternatives are summarized below in Table 1. The Trustees' evaluation of the alternatives is discussed in detail in Section 5.

Table 1: Summary of the Restoration Alternatives

(Alternatives in bold are elements of the Preferred Alternative. Alternatives marked with an * were implemented in whole or in part during emergency restoration and are not considered part of the Preferred Alternative unless they are proposed to be completed as part of the Preferred Alternative. See Section 5 for discussion of the preferred and non-preferred alternatives)

Alternative	Project Description
Acquire Park Land	**Acquire lands to compensate for loss of human uses and loss of riparian and wildlife habitat.**
Automobile Use Reduction	Encourage commuters to ride their bikes, walk or take the bus instead of driving their cars to reduce the automotive inputs to the watershed to compensate for loss of water quality.
Carcass Planting	Increase the nutrient base of Whatcom Creek by adding spawned-out salmon carcasses to compensate for losses to anadromous and resident fish.
Cemetery Creek Restoration	**Develop off-channel spawning, rearing, over-wintering habitat and summer cool-water refugia to compensate for losses of anadromous and resident fish.**
Channel Habitat Modifications*	Create or enhance instream features such as pools, gravel bars, riffles, glides and runs to compensate for losses of anadromous and resident fish.
Control Vegetation*	**Remove invasive plants such as Himalayan blackberry that degrade habitats along Whatcom Creek to compensate for loss of riparian and wildlife habitat.**
Debris Removal*	Remove garbage and debris from the Creek to benefit aesthetics and prevent flood-flow alteration to compensate for loss of human uses and loss of water quality.
Educational Kiosks	Build educational kiosks at each of the major restoration project sites, rather than a permanent center to compensate for loss of human uses.
Entrance Road, Rest-room & Parking Facility	**Build access road, restroom facility and parking lot on acquired parklands to compensate for loss of human uses.**
Erosion Control*	**Implement erosion control measures to minimize sedimentation of Whatcom Creek to compensate loss of habitat in the Creek and loss of riparian and wildlife habitat.**
Extend Hiking Trails*	Extend Whatcom Creek trail system to allow for greater public use to compensate for loss of human uses.
Fish Passage	Create increased upstream passage for anadromous salmonids at Middle Falls, thereby increasing available spawning habitat and potentially greater fish production to compensate for losses of anadromous and resident fish.
Flood Control	Create flood detention or retention capabilities by creating storage features in the stream channel to compensate for loss of riparian and wildlife habitat, losses of anadromous and resident fish, and loss of human uses.
Gabion Removal	Remove "rock basket" gabions placed on the stream banks in the past as flood levees or for bank stabilization purposes. The benefits of this option include increased riparian vegetation structure and possibly some flood flow alteration to compensate for loss o f riparian and wildlife habitat, loss of human uses, and losses of anadromous and resident fish.

Gravel Agitation*	Agitate gravel in Whatcom Creek to accelerate dispersion and weathering of trapped gasoline to compensate for loss of water quality and losses of anadromous and resident fish.
Hatchery Upgrades	Upgrade trout production by the hatchery in Whatcom Falls Park for recreational stocking of lakes in the area by increasing access to colder water to compensate for loss of human uses.
Interpretive Center	Create an interpretive center describing the recovery of Whatcom Creek and the impact of human activities on the health of the Creek to compensate for loss of human uses.
Invasive Plant Mapping and Guide to Control*	**Identify problem areas and develop treatment plans where invasive plants degrade portions of the Whatcom Falls Park and Whatcom Creek outside of the impacted area to compensate for loss of riparian and wildlife habitat.**
Lake Discharge Management	Seek an alternative source of cold water in Lake Whatcom and manage spilled water to reduce water temperatures to compensate for loss of water quality and losses of anadromous and resident fish.
Management Account	**Establish an account that will allow the City Parks Department to manage the impacted resources (*i.e.*, remove hazard, dead or diseased trees, manage in-stream structures, maintain plantings, etc.) in the future to compensate for loss of human uses.**
Management Plan for Creek	Create an overall management plan for Whatcom Creek using the environmental data, literature information and preliminary restoration plans developed during the damage assessment process to compensate for loss of riparian and wildlife habitat, losses of anadromous and resident fish, and loss of human uses.
Monitoring of the Creek Recovery	**Develop monitoring plan for injured resources and emergency restoration projects, including plants, in-stream structures, invertebrates, anadromous and resident fish to compensate for all lost resources and/or services.**
No Action	**Allow natural recovery to occur to compensate for all and/or specific lost resources and/or services. This alternative is proposed as part of some preferred alternatives.**
Off-site Land Acquisition	Acquire riparian lands in nearby watersheds to prevent future development and promote ecological and recreational uses to compensate for loss of riparian and wildlife habitat, losses of anadromous and resident fish, and loss of human uses. Multiple parcels of land were evaluated.
On-site Land Acquisition	**Acquire riparian lands in Whatcom Creek watershed to prevent future development and promote ecological and recreational uses to compensate for losses to anadromous and resident fish, loss of riparian and wildlife habitat, and loss of human uses. Multiple parcels of land were evaluated.**
Plant Large Trees	Promote recovery of burned lands by planting large trees to compensate for loss of riparian habitat and loss of human uses.
Planting Native Vegetation*	**Promote native plant communities through planting and enhancement of native tree seedlings and other native species to compensate for loss of riparian and wildlife habitat and loss of human uses.**
Reconstruction of Hiking Trails*	Repair hiking trails that were affected by the reconstruction of the Valencia Street Bridge to compensate for loss of human uses.
Reconstruction of Valencia Street Bridge*	Improve the design and services during reconstruction of the Valencia Street Bridge destroyed by the fire to provide increased opportunity for public use passage on a trail system below the bridge, on bike lanes crossing the bridge, and increased vehicular traffic support to compensate for loss of human uses.

Salmon Park	**Develop off-channel spawning, rearing and over-wintering habitat by excavation and reconnection of historic meander to compensate for losses to anadromous and resident fish and loss of human uses. The project would be constructed with public viewing access and interpretive signage.**
Sewer Line Upgrades	Upgrade the sewer line on the lower section of Whatcom Creek to make fish passage easier to compensate for losses to anadromous and resident fish.
Stocking	Plant catchable-size sterile trout to enhance the recreational fishery in Whatcom Creek prior to what may be achieved naturally to compensate for loss of human uses.
Temperature Modifications	Reduce summer water temperatures to levels that are preferred by salmonids by adding ground water flow to creek to compensate for losses to anadromous and resident fish.
Tree and Branch Removal*	**Remove burned trees representing a public safety hazard in the park and other public use areas in order to allow public use of these areas to compensate for loss of human uses and loss of wildlife habitat. Remove trees in such a way as to preserve wildlife habitat value of standing snags.**
Watershed Pledge Project	Create and fund a full-time pollution prevention position with the City of Bellingham to maintain and expand the existing voluntary pollution reduction program with the watershed to compensate for loss of water quality.
Woody Debris*	Insert and cable logs and stumps in stream to enhance habitat complexity and increase habitats for spawning and juvenile salmonids to compensate for losses of anadromous and resident fish.

4.4 Environmental Consequences (Indirect, Direct, Cumulative)

To restore resources and/or services lost as a result of the Incident, the Trustees examined a variety of proposed projects under the following restoration alternatives: 1) no-action and natural recovery, 2) ecological restoration, and 3) lost human-use restoration. The Trustees intend to avoid or reduce negative impacts to existing natural resources and services to the greatest extent possible. However, in implementing or approving the implementation of restoration actions, the Trustees could undertake actions that may have short- or long-term effects upon existing habitats or non-injured species. Project-specific environmental consequences for each proposed project are provided in Section 5.2. This section addresses the potential overall cumulative, direct, and indirect impacts and other factors to be considered in both the Oil Pollution Act and NEPA regulations.

The Trustees believe that the projects selected in this draft RP/EA will not cause significant impacts to natural resources or the services they provide. Further, the Trustees do not believe the proposed projects will affect the quality of the human environment in ways deemed significant.

Indirect Impacts—Environmental consequences will be limited to the Incident location. Indirect beneficial impacts will occur in other parts of Whatcom County, primarily due to enhancement of fish and wildlife populations.

Direct Impacts—Overall, proposed restoration actions included in this draft RP/EA will enhance functionality of ecosystems. There will be, however, some short-term impacts from the proposed projects such as:

- **Noise and Air Pollution**—Machinery and equipment used during construction and other restoration activities will generate noise. This noise may temporarily disturb wildlife and humans.
- **Threatened, Endangered, and Candidate Species**—As discussed in more detail in the following sections, there may be short-term impacts on fish and wildlife species as a result of construction activities. In accordance with state and federal permit conditions, in-water work will only take place in the absence of endangered or threatened species and during regulated time periods when no major fish runs occur. Impacts on mobile species (*e.g.*, birds, mammals) will be minor, consisting of short-term displacement. Overall, the construction of the fish habitat projects as part of the Preferred Alternative will benefit fish and wildlife species dependent on these types of habitat.

- **Water and Sediment Quality**—Although implementation of the proposed projects should result in no violations of water quality standards, there will be temporary increases in sedimentation and turbidity related to certain projects. Best management practices along with other avoidance and mitigation measures required by the regulatory agencies will be employed to minimize any water quality and sedimentation impacts.

- **Visual**—There will be temporary visual impacts during implementation of some of the proposed projects. Once the Trustees complete those projects, the visual impacts will cease. Beneficial aesthetic impacts would then extend to the users of the park and trail system.

- **Public Access/Recreation**—Public access may be temporarily affected during construction activities. Because implementation time for these projects will be relatively short, the impact will be short-lived.

- **Other (*e.g.*, economic, historical, land use, transportation)**—No significant adverse effects are anticipated to soil, geologic conditions, energy consumption, wetlands, or floodplains. The proposed restoration projects will have no adverse social or economic impacts on neighborhoods or communities. General land-use patterns will not be affected by the Preferred Alternative. The proposed projects will not adversely affect any known archaeological sites or sites of cultural significance.

Cumulative Impacts—Since the Trustees designed the projects primarily to improve recovery of injured natural resources and/or services, the cumulative environmental consequences will be beneficial. These cumulative impacts include restoration of the injured ecosystem by increasing wildlife, fish, and invertebrate habitats and providing additional recreational lands. Certain projects may also provide educational opportunities. The Trustees anticipate that monitoring of

projects funded under this draft RP/EA will confirm that cumulative impacts will be beneficial rather than adverse. Any unanticipated cumulative adverse effect on an area or other area program, plan, or regulatory regime from a proposed project identified prior to implementation of a proposed project will result in reconsideration of the project by the Trustees.

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